UNIVERSITY OF COPENHAGEN

Hopea odorata

Jøker, Dorthe

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SEED LEAFLET

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Hopea odorata Roxb.

Taxonomy and nomenclature

Family: Dipterocarpaceae **Synonyms:**

Vernacular/common names: merawan (trade name used for the timber of several species of light hardwood *Hopea* spp.) sao den (Vietnam); koki, mosau, thmar (Cambodia); kh'e:n (Laos); merawan siput jantah, chengal pasir, chengal mas (Malaysia); thingan, net, sauchi (Peninsular Malaysia); takhian-thong, takhian-yai (Thailand).

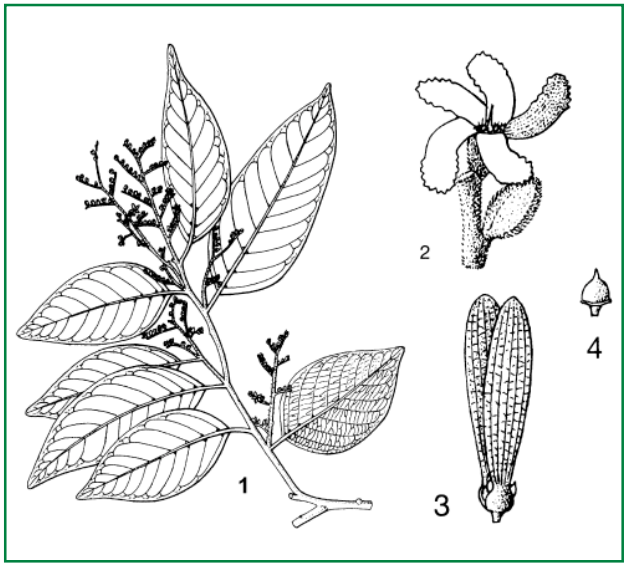
Distribution and habitat

Native to South-East Asia in India (Andaman Is.), Myanmar, Thailand and Indochina and south to the northern part of Peninsular Malaysia.

In most of the area of natural distribution it is found in lowland tropical forests on deep, rich soils up to 300 m altitude and rarely far away from streams. The Indian population, however, occurs in moist evergreen forest at higher altitudes, away from streams.

Best growth is obtained in areas with more than 1200 mm rainfall/year and mean annual temperature of 25°-27°C. It can grow in a wide range of habitats and is easy to handle as a plantation species.

In Vietnam a long period of selective logging has reduced the size of stands to small groups of trees or isolated individuals.



1, Flowering branch; 2, flower; 3, fruit with calyx lobes (wings); 4, fruit with calyx removed. From: Plant Resources of South-East Asia No. 5(1)

Uses

The timber is a strong light hardwood that is used for both heavy and light construction, furniture, veneer and a number of other uses. It has a density of 0.5 - 0.98 g/cm^3 at 15% moisture content.

It is suitable for planting on degraded lands and is also widely planted as an ornamental and shade tree. The bark has a high content of tannin suitable for tanning leather; it produces an inferior resin (rock dammar).

Botanical description

Evergreen tree up to 45 m tall with diameter of 120 cm and prominent buttresses. Leaves simple and alternate, 10-20 cm long with slightly unequal base. Inflorescence a branched panicle, terminal or axillary. Flowers small, unisexual, with 5 pinkish petals with hairs on both sides.

Fruit and seed description

The fruit is a globose nut about 1 cm in diameter, surrounded by the persistent calyx. The calyx has 5 lobes, two of which are extended into wings, 5-6 cm long and 1-2 cm wide. There is one seed per fruit. The seeds are polyembryonic with an average of 4 embryos per seed.

Flowering and fruiting habit

Flowering occurs at more or less regular intervals, usually every two years in trees of more than 8-10 years. In some fruiting years, fruits are produced in large quantities, in others it is restricted to a few branches. In most of the distribution area flowering occurs February-March and fruiting in April-July.

Harvest

The seeds are mature and ready for collection when the wings have turned a darker brown and the fruit coat has changed from green to yellow. It is important to time collection well, as seeds that are not fully mature have low viability.

The fruits are collected directly from the tree by climbing or by shaking the branches over tarpaulins on the ground. Collection from the forest floor should be avoided as these seeds have low viability and are often heavily infested by weevils.

Fresh seeds have a high moisture content and must be kept in loosely folded bags away from the sun during transport and temporary storage.

Processing and handling

Soon after collection the wings are removed manually and small, immature fruits and fruits that are infested by insects are discarded.

Storage and viability

The seeds are very desiccation sensitive and can only be stored for a short time. Fresh seeds with moisture content about 50% normally germinate 100% but even a small decrease in moisture content will lead to a decrease in germination. A recent trial showed that when seeds were dried down to 44% mc, germination went from 100 to 86%, at 31% mc germination was 74% and at 23% mc all seeds were dead.

After 16 weeks of storage germination was down to 50% and after 20 weeks only few seeds were alive. This pattern was the same for seeds at 37% and 48% mc and for storage at 16° and 25°C although 16°C seemed to be slightly better because of less pre-sprouting. Other trials have shown that the seeds are temperature sensitive and lose viability quickly when stored at 10°C.

The results are not conclusive but so far the following recommendations can be given. If the seeds are to be stored for less than a month, they should be packed in loosely folded bags to allow ventilation and kept at room temperature. For more than a month, dry the seeds down slightly, to about 40% mc, and store at 15°C in folded plastic bags.

Dormancy and pretreatment

The seeds are not dormant and need no pretreatment. Germination can be improved by soaking in water for 8 hours before sowing.

Sowing and germination

For testing in the lab, the seeds (dewinged fruits) are germinated on moist paper or cotton wool at 20-30°C.

In the nursery the seeds are sown in seedbeds and transplanted to into polybags after germination. The seedlings perform best under 50% shade. After 6-9 months, when the plants have reached a height of 40-60 cm, they are ready for transplanting into the field.

Because of the problems with seed storage, vegetative propagation with cuttings is often used. Orthotropic shoots from juveniles (1-4 year old plants) perform best. Cuttings about 10 cm long, with two leaves that are shortened to 1/2 or 2/3 of the length are treated with 2,4-D 50 ppm or IAA 500 ppm for 3 seconds and rooted in sand.

Phytosanitary problems

The seeds can be heavily infested with weevils, especially after lying on the forest floor. In the store room fungal infections can be a problem.

Selected readings

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Tree habit. Photo by Saw Leng Guan

THIS NOTE WAS PREPARED BY
DANIDA FOREST SEED CENTRE

Author: Dorthe Jøker

Danida Forest Seed Centre
Krogerupvej 21
DK-3050 Humlebaek
Denmark

Phone: +45-49190500
Fax: +45-49160258
Email: dfsc@sns.dk
Website: www.dfsc.dk